# CELL AND TISSUE KINETICS

## Edited by N. A. Wright

Vol. 15, 1982

*Editorial Board*

M. Tubiana (*Chairman*), L. Simpson-Herren,
B. Barlogie, R. J. Berry, B. K. Bhuyan, F. Bresciani,
P. Dormer, K. Elgjo, J. F. Fowler, J. Fried,
P. Galand, J. Gray, O. H. Iversen, S. Killmann,
M. Lipkin, P. D. M. Macdonald, E. P. Malaise,
M. L. Mendelsohn, D. Metcalf, N. Odartchenko,
M. F. Rajewsky, S. Rockwell, L. M. Schiffer,
B. Schultze, G. G. Steel, F. A. Valeriote,
A. J. Valleron, L. M. van Putten

Blackwell Scientific Publications
Oxford London Edinburgh Boston Melbourne

Published by
Blackwell Scientific Publications Ltd,
Osney Mead, Oxford OX2 0EL

*Printed in Great Britain by Spottiswoode Ballantyne Ltd.*
*Colchester and London*

# CONTENTS

## VOL. 15, NO. 1, JANUARY 1982


C. D. R. DUNN, J. B. JONES, R. D. LANGE, E. G. WRIGHT and M. A. S. MOORE. Production of presumptive humoral haematopoietic regulators in canine cyclic haematopoiesis 1

J. FRIED, A. G. PEREZ, J. DOBLIN and B. D. CLARKSON. Effects of cytosine arabinoside and daunorubicin on survival and cell cycle progression of chinese hamster ovary cells 11

H. HARA, Y. OHE, K. NOGUCHI, K. NAGAI, K. TSUYAMA and Y. KITAMURA. Presence of pluripotent haemopoietic precursors *in vitro* (CFU-mix) in haemopoietic tissues from mice of $W/W^v$ genotype 25

A. V. QUIRK, R. H. PAIN, MAUREEN DAVISON and S. SHUSTER. Partial purification of a low molecular weight inhibitor of epidermal DNA synthesis 31

E. NEČAS and F. HAUSER. Analysis of the effects of hydroxyurea on stem cell (CFU-s) kinetics 39

W. J. HUME and C. S. POTTEN. A long-lived thymidine pool in epithelial stem cells 49

M. J. KOURY and S. B. KRANTZ. Velocity sedimentation profiles of normal and regenerating primitive erythroid burst-forming units: relation to phase of cell cycle and growth *in vivo* 59

A. J. LAWSON, R. A. SMIT, N. A. JEFFERS and J. W. OSBORNE. Isolation of rat intestinal crypt cells 69

S. BERTSCH and F. MARKS. A comparative study on wound-healing in neonatal and adult mouse epidermis *in vivo* 81

M. DOMON. Radiosensitivity variation during the cell cycle in pronuclear mouse embryos *in vitro* 89

PROCEEDINGS OF THE CELL KINETICS SOCIETY. Fifth Annual Meeting, held 4–5 March 1981, at the Asilomar Conference Grounds, Pacific Grove, California, U.S.A. 99


## VOL. 15, NO. 2, MARCH 1982


GRACE M. DONNELLY, D. G. HAACK and CONNIE S. HEIRD. Tracheal epithelium: cell kinetics and differentiation in normal rat tissue 119

J. H. GIBBS, R. C. POTTS, R. A. BROWN, A. J. ROBERTSON and J. SWANSON BECK. Mechanisms of phytohaemagglutinin (PHA) stimulation of normal human lymphocytes: 'trigger', 'push' or both? 131

J. E. COGGLE and J. D. TARLING. Cell kinetics of pulmonary alveolar macrophages in the mouse 139

I. BURSUKER and R. GOLDMAN. The regulation of bone marrow-derived mononuclear phagocyte differentiation and mobilization in syngeneic and allogeneic YAC–lymphoma-bearing mice 145

U. MØLLER, N. KEIDING and F. ENGEL. Subclassification of cells in S phase in a partially synchronized cell system. Methodological problems concerning pulse-labelling of epithelial cells in the hamster cheek pouch 157

F. Smadja-Joffe, M. C. Le Bousse-Kerdiles, B. Klein, E. P. Malaise, C. Jasmin and V. Degiorgis. Cellular proliferation of the murine sarcoma induced by the Moloney sarcoma virus 169
V. S. Gallicchio and M. G. Chen. Cell kinetics of lithium-induced granulopoiesis 179
R. M. Klein. Acinar cell proliferation in the parotid and submandibular salivary glands of the neonatal rat 187
T. Lindmo. Kinetics of protein and DNA synthesis studied by mathematical modelling of flow cytometric protein and DNA histograms 197
A. Macieira-Coelho and F. Taboury. A re-evaluation of the changes in proliferation in human fibroblasts during ageing *in vitro* 213
Brief Communication
V. C. Gavino, G. E. Milo and D. G. Cornwell. Image analysis for the automated estimation of clonal growth and its application to the growth of smooth muscle cells 225
Letter to the Editor 233

VOL. 15, NO. 3, MAY 1982

H. Baisch, H.-P. Beck, I. J. Christensen, N. R. Hartmann, J. Fried, P. N. Dean, J. W. Gray, J. H. Jett, D. A. Johnston, R. A. White, C. Nicolini, S. Zeitz and J. V. Watson. A comparison of mathematical methods for the analysis of DNA histograms obtained by flow cytometry 235
D. G. Hirst, J. Denekamp and B. Hobson. Proliferation kinetics of endothelial and tumour cells in three mouse mammary carcinomas 251
E. Nečas. Stem cell (CFUs) proliferation inhibitor in blood of mice injected with hydroxyurea 263
E. Nečas and J. Činátl. Enhanced triggering of stem cell proliferation after two doses of hydroxyurea 269
K. Christov-Tzelkov and G. Graschev. Cell population kinetics of thyroid follicular cells in infant rats 275
G. S. Jovčić, N. N. Stojanović, S. I. Hajduković and N. V. Petrović. The stimulation of bone marrow granulopoiesis of normal CBA mice *in vitro* and *in vivo* by serum obtained from leucophoretic rats 285
P. Dörmer, H. Militzer, P. Dahr Jr and W. Ruppelt. Kinetics and cellularity of erythroblasts in the growing rat 295
C. S. Potten, H. E. Wichmann, M. Loeffler, K. Dobek and D. Major. Evidence for discrete cell kinetic subpopulations in mouse epidermis based on mathematical analysis 305
W. Nothdurft, K. H. Steinbach, W. M. Ross and T. M. Fliedner. Quantitative aspects of granulocytic progenitor cell (CFUs) mobilization from extravascular sites in dogs using dextran sulphate (DS) 331
U. Møller and N. Keiding. Circadian variations in influx and efflux of the S phase in a partially synchronized cell system. Double-labelling with [$^3$H]thymidine in the epithelium of the hamster cheek pouch 341

VOL. 15, NO. 4, JULY 1982

C. S. Potten, S. Chwalinski, R. Swindell and M. Palmer. The spatial organization of the hierarchical proliferative cells of the crypts of the small intestine into clusters of 'synchronized' cells 351
H. H. Gerhartz, W. Nothdurft and T. M. Fliedner. Effect of low-dose whole-body irradiation on granulopoietic progenitor cell subpopulations: implications for CFUc release 371
M. C. Mackey and P. Dörmer. Continuous maturation of proliferating erythroid precursors 381
Seymour Gelfant. On the existence of non-cycling germinative cells in human epidermis *in vivo* and cell cycle aspects of psoriasis 393
P. Foa, A. T. Maiolo, L. Lombardi, H. Toivonen, T. Rytömaa and E. E. Polli. Growth pattern of the human promyelocytic leukaemia cell line HL60 399
E. Hamilton and J. Dobbin. [$^{3}$H]thymidine labels less than half of the DNA-synthesizing cells in the mouse tumour, carcinoma NT 405
G. Speit, Dorothee Speit and W. Vogel. A comparative investigation of the antimitotic action of 2-mercaptoethanol and colcemid on V-79 Chinese hamster cells 413
E. Fibach, A. Treves, T. Peled and E. A. Rachmilewitz. Changes in cell kinetics associated with differentiation of a human promyelocytic cell line (HL60) 423
V. O. Müller, H. Friede and Brigitte Schultze. Cell kinetic studies on the JB-1 ascites tumour of the mouse. FLM-method modified by double-labelling with [$^{3}$H]- and [$^{14}$C]thymidine 431
F. Frassoni, Nydia G. Testa and B. I. Lord. The relative spatial distribution of erythroid progenitor cells (BFUe and CFUe) in the normal mouse femur 447
N. M. Barfod and Pia Schjerbeck. Structural and functional significance of association of a low molecular weight chalone from JB-1 ascites tumours with high molecular weight factors 457

VOL. 15, NO. 5, SEPTEMBER 1982

H.-P. Beck. Radiotoxicity of incorporated [$^{3}$H]thymidine. Consequences for the interpretation of FLM data of irradiated cell populations 469
R. C. Klann and Ann C. Marchok. Effects of retinoic acid on cell proliferation and cell differentiation in a rat tracheal epithelial cell line 473
N. Williams and Heather Jackson. Kinetic analysis of megakaryocyte numbers and ploidy levels in developing colonies from mouse bone marrow cells 483
T. Lehy. Self-replication of somatostatin cells in the antral mucosa of rodents 495
Povl E. Budtz. Time-dependent effects of removal from the pars distalis of the pituitary gland on toad epidermal cell and tissue kinetic parameters 507
V. Digernes, G. Bronstad, T.-E. Sand and T. Christoffersen. The proliferative response of rat liver parenchymal cells after partial hepatectomy. A methodological study comparing flow of nuclear DNA content and *in vivo* and *in vitro* uptake of thymidine 521

MICHAEL NÜSSE. Synchronization of mammalian cells by selection and additional chemical block studied by DNA distribution analysis and BrdUrd-Hoechst 33258-technique 529
E. K. ROFSTAD, Ø. FODSTAD and T. LINDMO. Growth characteristics of human melanoma xenografts 545
C. J. PRITCHETT, P. V. SENIOR, J. P. SUNTER, A. J. WATSON, D. R. APPLETON and R. G. WILSON. Human colorectal tumours in short-term organ culture. A stathmokinetic study 555
Y. YOSHIDA, E. BOKU, T. OHKUBO, T. KAMAMOTO, A. HIRAOKA, M. YAMAGISHI and H. UCHINO. Radioautographic studies on the formation and maturation of bone marrow lymphocytes in mice 565
BOOK REVIEWS 575

VOL. 15, NO. 6, NOVEMBER 1982

J. D. TARLING and J. E. COGGLE. Evidence for the pulmonary origin of alveolar macrophages 577
J. LANDRY, J. P. FREYER and R. M. SUTHERLAND. A model for the growth of multicellular spheroids 585
N. A. WRIGHT and M. IRWIN. The kinetics of villus cell populations in the mouse small intestine. I. Normal villi: the steady state requirement 595
N. A. WRIGHT and A. AL-NAFUSSI. The kinetics of villus cell populations in the mouse small intestine. II. Studies on growth control after death of proliferative cells induced by cytosine arabinoside with special reference to negative feedback mechanisms 611
M. OLIVOTTO, V. BODDI, P. DELLO SBARBA and ANNAROSA ARCANGELI. A comparative kinetic analysis of proliferation *in vitro* of Con-A-treated splenocytes and syngeneic leukaemia cells 623
H. KATO, M. REFF and E. L. SCHNEIDER. Analysis of regenerating hepatic cell replication *in vivo* by differential chromatid staining 637
A. VAČEK, L. TKADLECEK, V. N. SHVETS, A. BARTONICKOVA, S. VIKLICKA, D. ROTKOVSKA, L. V. SEROVA and T. V. MICHURINA. Space flight effects on haemopoietic stem cells of the bone marrow of rats 643
R. M. KLEIN, J. CLANCY JR and S. STUART. Acute lethal graft-versus-host disease stimulates cellular proliferation in the adult rat liver 651
A. V. FISKER, E. ØSTERGAARD and T. KARRING. The effect of environmental stress stimuli on cell division in rat palatal epithelium 661
E. NEČAS. Stem cell (CFU-s) proliferation in sublethally irradiated mice 667
PROCEEDINGS OF THE CELL KINETICS SOCIETY, Sixth Annual Meeting, held 18–21 March 1982, at the Dunfey Houston Hotel, Houston, Texas, U.S.A. 673
BOOK REVIEW 689
AUTHOR INDEX TO VOLUME 15 691